

18. (New) A method according to claim 1, wherein the microelement array is a microlens array.

19. (New) A method according to claim 1, wherein the microelement array is a microprism array.

20. (New) A method according to claim 1, wherein the microelement array is a hologram element.

21. (New) A method according to claim 1, wherein the microelement array is an array of light switches.

Remarks

I. Status of the claims

Claims 1-17 were previously pending in this application. The Office Action stated that only claims 1-16 were pending. Claim 17, however, was added in the Preliminary Amendment filed on August 2, 2001.

Claims 1-10 and 13-21 are now pending in this application after the amendments noted above. Applicants have canceled claims 11-12 and incorporated their subject matter into independent claims 1, 13 and 17. New claims 18-21 have also been added. Support for the new claims appears in the specification at page 2, lines 21-27 and page 3, lines 11-14.

II. Objection to the drawings

The Examiner objected to the drawings and required either a proposed drawing correction or actual corrected drawings to avoid abandonment.

Applicants did not file drawings in this application. The Examiner's objection was based on 37 C.F.R. § 1.83(a), which assumes the existence of drawings. As there are no drawings to correct, applicants comments here are completely responsive to the Examiner's objection under 37 C.F.R. § 1.83(a) and this application cannot be held abandoned for failure to correct any drawings.

The Examiner did not assert that original drawings were required under 37 C.F.R. § 1.81(c). In a later telephone conference initiated by the undersigned, however, the Examiner indicated that the intention of the objection was indeed to require an original drawing. An original drawing under 37 C.F.R. § 1.81 is not

required for the understanding of the subject matter embraced by the claims. In this regard, applicants note that one reference cited by the Examiner, U.S. Patent No. 5,929,201, discloses and claims a source of radiation (polarized light) with incidence angles in view of an optical alignment layer, yet no drawing is needed or is present in that patent. With regard to the Examiner's reference to a microelement array of the present invention, which was mentioned in claim 12 and now included in claims 1, 13 and 17, one skilled in the art understands what a microarray element is and can understand the claimed inventions without the need to refer to any drawings.

Despite the above, applicants have fully cooperated with the Examiner's telephone request and have added original Figure 1. The drawing does not introduce new matter into the specification. Support for the drawings appears throughout the specification, for example, at page 2, lines 4-11.

III. Rejections under 35 U.S.C. § 102

The Examiner rejected claims 1, 3-9, 11 and 13-15 as anticipated by U.S. Patent No. 5,912,717. The Examiner also rejected claims 1 and 13-16 as anticipated by GB 2,319,093.

Applicants have amended all three independent claims 1, 13 and 17 to incorporate the limitations of claims 11 and 12. By virtue of reciting the limitation of at least claim 12, the resulting claims should no longer fall within the scope of either of the novelty rejections, as claim 12 itself was not rejected. None of the amendments to the claims constitute acquiescence in the merits of the rejection. In light of the above, the novelty rejections should be moot, and applicants respectfully request that the rejections be withdrawn.

IV. Rejections under 35 U.S.C. § 103(a)

The Examiner rejected claim 2 under as obvious over U.S. Patent No. 5,929,201. The Examiner also rejected claim 10 as obvious over U.S. Patent No. 5,912,717 in view of U.S. Patent No. 6,001,277.

As mentioned above, applicants have amended all three independent claims 1, 13 and 17 to incorporate the limitations of claims 11 and 12. By virtue of incorporating the limitations of at least claims 11 and 12, the resulting claims should not fall within the scope of either of the above obviousness rejections. As before,

none of the amendments to the claims constitute acquiescence in the merits of the rejections. In light of the above, applicants respectfully request that the Examiner withdraw the above rejections.

The Examiner rejected claim 12 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,912,717 to Sugiyama et al. ("Sugiyama") in view of U.S. Patent No. 6,306,563 to Xu et al. ("Xu"). Applicants traverse this rejection as it applies to the amended claims.

The Examiner stated that Sugiyama teaches the making of a wall of a liquid crystal cell, comprising exposing material of the cell to unpolarized natural light from an oblique direction, where the resulting cell imparts a tilt and azimuthal alignment to liquid crystal molecules. The Examiner cited Xu as teaching a method of making a wall of a liquid crystal cell, wherein between the source of the radiation and the material there is interposed a microelement array for transmitting light in an orthogonal direction. The Examiner concluded that it would have been obvious to modify the method of Sugiyama by interposing a microelement array of Xu between the source of radiation and the material for transmitting light in an orthogonal direction.

Applicants do not agree with the Examiner's belief that Xu teaches "a method of making a wall of a liquid crystal cell, wherein between the source of the radiation and the material, there is interposed a microelement array for transmitting light in orthogonal direction." Applicants see no teaching in Xu of making a wall of a liquid crystal cell at all. Xu instead teaches the making of optical waveguide devices made from perfluoropolymeric materials, not the making liquid crystal cells.

Aside from the above, the Examiner may only establish a *prima facie* case of obviousness if, among other things, it is shown that sufficient motivation existed in the art to combine the reference teachings. MPEP § 2143. In this regard, the Examiner has the burden of providing actual evidence, of a "clear and particular" nature, that would support the needed combination. *In re Dembiczaik*, 174 F.3d 994, 999 (Fed. Cir. 1999).

Looking to the facts of this case, there is no clear and particular evidence to support the combination of the teachings of Xu and Sugiyama. The portion of the Xu patent cited by the Examiner, col. 24, lines 54-58, relates to the possibility of making arrays of micro-optical elements such as lenses or prisms following the Xu method.

Xu mentions in the same column at lines 58-64 that those optical element arrays may have utility in, for example, liquid crystal displays, projection systems, liquid crystal viewing screens, and several other applications that do not include the use of liquid crystal devices. None of these listed applications include or even suggest the making of liquid crystal cell walls, let alone the making of liquid crystal cells as disclosed in Sugiyama. On the other hand, Sugiyama for its part does not suggest incorporating a microelement array in its own process, and the Examiner has not asserted otherwise. Thus, neither of the cited documents contain any suggestion to combine their teachings with the other.

Applicants remind the Examiner that this rejection cannot be supported simply by identifying in the art a process of making a liquid crystal cell (Sugiyama) and a separate disclosure of an array of micro-optical elements (Xu). See *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1316 (Fed. Cir. 2000) ("[I]dentification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention."). Instead, as made clear above, the obviousness analysis looks to the motivation to combine all necessary elements of the references. Given the tremendous number of possible known uses for arrays of micro-optical elements as disclosed in Xu, and given that none of the uses particularly disclosed in Xu links arrays of micro-optical elements to the making liquid crystal cell walls, the motivation to combine the reference teachings is clearly absent in this instance.

In light of the above, applicants respectfully request that this rejection not be maintained for any of the remaining pending claims.

If there is any fee due in connection with the filing of this Amendment, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

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Appendix Detailing Amendments to Claims

1. (Amended) A method of making a wall of a liquid crystal cell, comprising imparting a property to a layer of a material on the wall, said property being that liquid crystal molecules placed on the material on the wall in use of the cell adopt a preferred alignment,

the method comprising exposing the material to unpolarised or circularly polarized radiation from an oblique direction,

wherein the said property further includes imparting a preferred tilt as well as a preferred azimuthal alignment to such liquid crystal molecules,

wherein the radiation to which the material is exposed is zonewise patterned by interposing a microelement array between the source of the radiation and the material, and such liquid crystal molecules are zonewise aligned.

13. (Twice Amended) A liquid crystal cell wall bearing a layer of material, wherein the material has been exposed to unpolarised or circularly polarised radiation from an oblique direction, wherein the radiation to which the material was exposed was zonewise patterned by interposing a microelement array between the source of the radiation and the material, and wherein the material can impart an alignment to liquid crystal molecules if placed on the material, wherein liquid crystal molecules placed on the material would be zonewise aligned.

17. (Amended) A method of making a wall of a liquid crystal cell, comprising exposing a layer of a material on the wall to unpolarised or circularly polarised radiation from an oblique direction, wherein the material can impart a tilt and an azimuthal alignment to liquid crystal molecules if placed on the material,

wherein the radiation to which the material is exposed is zonewise patterned by interposing a microelement array between the source of the radiation and the material, and liquid crystal molecules placed on the material would be zonewise aligned.